PRESENTATION OF RESULTS

COSTS AND OTHER PURCHASING FACTORS FOR CUSTOMERS OF MID-RANGE MANUFACTURING SOFTWARE

Presented to

IBM Corporation

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INPUT

AGENDA

- Background
- Market Overview
- Vendors: SAP, SSA, J.D. Edwards
- Product Attributes: Importance and Vendor Ratings
- Costs
- Conclusions

BACKGROUND

OBJECTIVES

- Costs of manufacturing software products: SAP, SSA, J.D. Edwards
  - Initial
  - On-going
  - Actual vs. expectations
- Product attributes' importance and satisfaction
  - Functionality
  - Flexibility
  - Reliability
  - Reputation
  - Support
  - Ease of installation
- Contrasts between U.S. and Europe

METHODOLOGY

- Structured interviews: U.S., UK, France, Germany
- Qualification: Installation of manufacturing modules from SSA, SAP (R3), J.D. Edwards (evenly distributed)
- Initial findings (i.e., research problem)
  - R3 manufacturing components in U.S. -- betas or currently being installed (empty "cell")
  - Many European sites of SSA and J.D. Edwards in manufacturing companies appear to largely use accounting modules.
- Modification of research methodology
  - Europe: Large-scale cold-call qualification effort
  - U.S.
    - -- SAP beta site interviews
    - -- Big 6 SAP interviews
- Situation encountered

RESPONDENT DISTRIBUTION

	J.D. Edwards	SSA	SAP	Total
U.S.	31	42	2	75
Europe	7	6	15	28
Total	38	48	17	103

INTERVIEWS: EUROPEAN QUALIFICATION

Respondent Category	Number	Percent
SAP/J.D.Edwards/SSA		
• Installed recently	31	6%
• Installed before 1990	4	1
• Formerly installed	10	2
Other Package	91	19
In-House Developed	23	5
None	326	67
Total	485	100%

INFORMATION SOURCES

- Structured interviews and analysis for this study
- Non-proprietary knowledge from other manufacturing and software studies
- In-depth discussions with manufacturing users and vendors
- Interviews with Big 6 firms on SAP (evaluation, support of SAP)

U.S. MARKET OVERVIEW

- DISCRETE MANUFACTURING
- PROCESS MANUFACTURING

DISCRETE MANUFACTURING: U.S. SOFTWARE MARKET OVERVIEW

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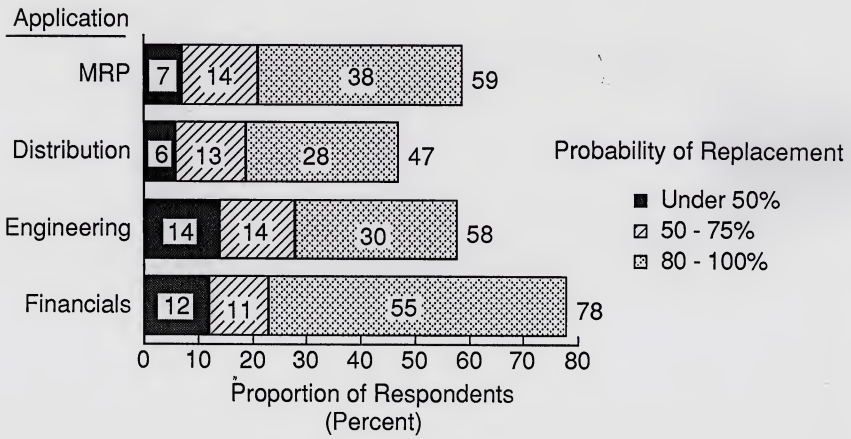
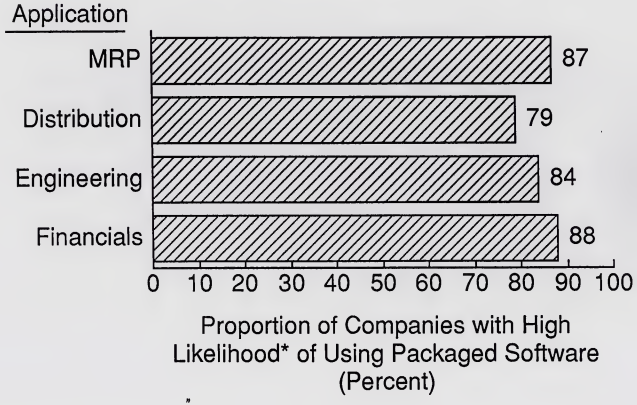
Percent of Companies Planning to Replace Selected Applications in Next Three Years



Likelihood of Using Packaged Software in Replacement System



* i.e., Companies giving a probability of using packaged software as 75% or more.

Hardware/Operating Environments Now Being Considered for New Applications

Environments	Percent of Companies *
Proprietary Platforms	54
UNIX	38
Intel	19
Other	5
Not specified	10

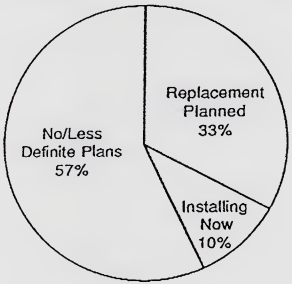
* Note: Totals more than 100% due to multiple evaluations.

** Less than 1%

PROCESS MANUFACTURING: U.S. SOFTWARE MARKET OVERVIEW

INPUT

Replacement Status for Priority Applications
Targeted Manufacturing Applications



N = 124

Note: Omits financial and "other" applications

Application Focus

Principal Focus

Plant operations
Environmental, health and safety
Customer service
Resource planning
Product management

Secondary Focus

Financial/accounting
Order entry
Distribution
Sales and marketing
Other (e.g., Bar coding, EDI, imaging, maintenance, POS)

Note:

- Respondents specifically questioned on status of "principal" applications.
- "Secondary" application status was volunteered

Probability of Using Software Package for Planned Replacement Manufacturing Applications *

Probability of Using Package	% of Applications
75% or greater	78%
25-50%	10%
0 or don't know	12%
	100%

*Excluding Financial and "Other"

AVERAGE EXPENDITURES PER SEGMENT ON PRIORITY APPLICATIONS

	MEDIUM COMPANIES			LARGE COMPANIES		
INDUSTRY	AVERAGE # OF PRIORITY APPLICATIONS	X AVERAGE SPENDING PER APPL. ($MM)	= AVERAGE EXPENDITURE PER CO. ($MM)	AVERAGE # OF PRIORITY APPLICATIONS	X AVERAGE SPENDING PER APPL. ($MM)	= AVERAGE EXPENDITURE PER CO. ($MM)
DRUG	4	1.0	4.0	5	3.0	15
FOOD	3	.75	2.25	5	2.0	10
CHEMICAL	3	.25	.75	4	.75	3

EXPENDITURES BY SEGMENT ON PACKAGED SOFTWARE FOR PRIORITY APPLICATIONS: 1993-1995

	MEDIUM COMPANIES			LARGE COMPANIES			
INDUSTRY	AVERAGE SPENDING/CO. ON APPLIC. PKGS ($MM)*	X NUMBER OF COMPANIES**	= APPLICATION PACKAGE EXPENSE ($MM)	AVERAGE SPENDING/CO. ON APPLIC. PKGS. ($MM)*	X NUMBER OF COMPANIES	= APPLICATION PACKAGE EXPENSE ($MM)	TOTAL
DRUG	.75	150	110	3.75	15	60	170
FOOD	.50	1000	500	3.75	35	130	630
CHEMICAL	.20	500	100	3	35	110	210
TOTAL			$710			$300	$1010

* 75% OF TOTAL APPLICATION SPENDING

** ESTABLISHMENTS - INPUT ESTIMATE FROM DEPT. OF COMMERCE DATA

SAP, SSA, J.D. EDWARDS

- OVERVIEW
- STRENGTHS AND WEAKNESSES
- BIG 6 ON R3

VENDOR COMPARISONS: OVERVIEW

	SAP (R3)	J.D. Edwards (AS/400)	SSA (AS/400)
Manufacturing Software Sites			
• U.S.	20(a)	1,000	3,000
• Europe	100	200(b)	2,000(b)
Release Date	1993	1988	1988
Product Price ($k)			
• Minimum	$100	$150	$150
• Typical	500	300	300
• High	1,000	500	500
Module Coverage	Full(c)	Full(c)	Full(c)
Module Coupling	Tight	Loose	Loose

(a) Betas and installations in progress

(b) Appear to accounting installations in manufacturing companies with minimal manufacturing modules

(c) Includes materials management, plant maintenance, quality management, sales/marketing planning, production planning and control

VENDOR STRENGTHS AND WEAKNESSES: SAP

Strengths

- Excellent understanding of manufacturing, e.g., can offer niche function libraries -- over 100 for oil industry
- Excellent perceived understanding of manufacturing
- Unquestioned leader in process manufacturing
- Dedication to product improvement
- Modules fit together
- Very well positioned in 1996

VENDOR STRENGTHS AND WEAKNESSES: SAP

Weaknesses

- No special position in discrete manufacturing
- Complex product
- "SAP knows best" -- not user-oriented (or user-friendly)
- Customers must make more of a commitment (can be viewed as a plus)
- R3 introduction slow
- R3 unlikely to meet cost expectations for a "client/server" product
- Needs more expert assistance than most competitive products

VENDOR STRENGTHS AND WEAKNESSES: SSA

Strengths

- Truly modular
- Proven discrete product -- deep user base
- User-oriented company and products
- Good price/performance
- Supply professional services/customizing

VENDOR STRENGTHS AND WEAKNESSES: SSA

Weaknesses

- Not viewed as a manufacturing-oriented company
- Evolutionary modules
  - From accounting to manufacturing
  - Modules introduced piecemeal
  - Interfaces not always well designed
- Not process industry oriented
- Long term technical future = ??

VENDOR STRENGTHS AND WEAKNESSES: J.D. Edwards

Strengths

- Truly modular
- Proven product -- deep user base
- Excellent reputation in discrete; good in process
- User-oriented company and products
- Good price/performance
- Viewed as having manufacturing understanding (more than SSA, less than SAP)

VENDOR STRENGTHS AND WEAKNESSES: J.D. Edwards

Weaknesses

- Evolutionary modules
  - From accounting to manufacturing
  - Modules introduced piecemeal
  - Interfaces not always well designed
- Long term technical future = ??

VENDOR STRENGTHS AND WEAKNESSES: SAP

Strengths

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PRODUCT ATTRIBUTES: IMPORTANCE AND VENDOR RATINGS

Software Selection Criteria

Factor	Importance
Reliability	4.6
Functionality	4.5
Vendor Support	4.2
Flexibility	4.1
Vendor Reputation	3.8
Operating/Support Costs	3.5
Ease of Installation	3.4
Cost of Software	3.4
Cost of Associated Hardware	3.1
Installation Costs	3.0

Note: 1 = Low, 5 = High

Ratings of Package Selected

Factor	J.D.Edwards	SSA	SAP
Functionality	4.1	4.0	4.1
Flexibility	4.2	3.6	3.9
Reliability	3.9	3.7	4.1
Vendor Reputation	3.9	4.0	3.3
Vendor Support	4.1	3.6	3.5
Ease of Installation	3.2	3.4	3.0
Cost of Software	3.1	3.2	2.8
Cost of Associated Hardware	3.1	3.4	2.9
Installation Costs	3.0	3.3	2.6
Operating/Support Costs	3.1	3.4	3.1

Note: 1 = Low, 5 = High

COSTS

- IMPORTANCE
- COSTS
- EXPECTATIONS VS. REALITY

COSTS

Factor	Importance	Rating JDE	SSA	SAP
Software	3.4	3.1	3.2	2.8
Hardware	3.1	3.1	3.4	2.8
Installation	3.0	3.0	3.3	2.6
Operations/ Support	3.5	3.1	3.4	3.1

INITIAL COSTS
($k)

J.D. EDWARDS: U.S.

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
Software	50	100	255	400	750
Hardware	12	150	175	210	500
Operating System	10	30	35	45	50
Customi-zation	4	40	105	150	500
Education	4	30	55	85	300
Total	50	200	375	500	1000

INITIAL COSTS
($k)

J.D. EDWARDS: EUROPE

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
Software	70	70	125	180	180
Hardware					18
Operating System					70
Customi-zation	36				430
Education	20		20		22
Total					

INITIAL COSTS
($k)

SSA: U.S.

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
Software	50	150	200	250	250
Hardware	20	100	225	250	1000
Operating System	10	20	25	50	100
Customi-zation	20	50	265	500	1500
Education	5	50	65	80	750
Total	150	300	750	900	1300

INITIAL COSTS
($k)

SSA: EUROPE

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
Software	10	10	30	50	740
Hardware	730	730	550	900	900
Operating System	10	10	200	500	500
Customi-zation	75	75	175	290	290
Education	7	7	30	220	220
Total	150	150	900	1300	1500

INITIAL COSTS
($k)

SAP: EUROPE

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
Software	200	210	230	250	260
Hardware	38	40	70	90	200
Operating System	11	20	35	40	200
Customi-zation	4	50	75	90	90
Education			10		40
Total	100	250	350	500	700

ONGOING COSTS
($k)

J.D. EDWARDS: U.S.

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
In-house					
Training	2	30	45	65	425
Modification	2	30	50	75	250
Computer Operations	10	15	50	75	500
Admin.	35	40	75	95	190
Vendor Svcs					
Total					

ONGOING COSTS
($k)

J.D. EDWARDS: EUROPE

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
In-house					
Training					
Modification			200		
Computer Operations					
Admin.					
Vendor Svcs					
Total			200		

ONGOING COSTS
($k)

SSA: U.S.

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
In-house					
Training	5	35	45	75	450
Modification	10	45	75	100	375
Computer Operations	25	35	75	80	250
Admin.	10	20	40	50	150
Vendor Svcs	1		75		150
Total	20	140	200	250	500

ONGOING COSTS
($k)

SSA: EUROPE

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
In-house					
Training	10	10	20	24	90
Modification	15	15	20	25	90
Computer Operations	30		40		150
Admin.	25		30		30
Vendor Svcs			30		
Total	50		120		350

ONGOING COSTS
($k)

SAP: EUROPE

Factor	100% Range	50% Range	Mid-point	50% Range	100% Range
In-house					
Training					
Modification			25		
Computer Operations			80		
Admin.					
Vendor Svcs					
Total	20		60		80

SOFTWARE LICENSE PRICING APPROACHES
(Percent of Respondents Reporting)

Approach	U.S. JDE	U.S. SSA	Europe JDE	Europe SSA	Europe SAP
Number of Users	--	--	20%	29%	33%
Hardware Model	93%	81%	80%	57%	40%
Operating System	3%	10%	20%	14%	33%
Number/Type of Applications	70%	52%	60%	57%	13%
Negotiations	7%	--	--	--	33%

"NO SURPRISES" ON COSTS?

	Initial	Ongoing
U.S.		
JDE	88%	94%
SSA	85%	86%
SAP	--	--
Europe		
JDE	100%	60%
SSA	100%	71%
SAP	83%	47%

COST ISSUES

- Cost picture varies greatly
  - Module(s) added
  - Upgraded vs. replacement platform
- Scattered, unconsolidated cost records
- Incomplete grasp of operating costs
- Cost as a secondary factor
- Prepared/expect to pay sizable costs
- Few "cost surprises" in U.S.
- More "cost surprises" for European customers
  - Ongoing costs
  - SAP

CONCLUSIONS

- Large, changing market
- Functional areas taking lead (U.S. ahead)
- Cost
  - Secondary purchasing factor
  - Expect to pay for value
  - Costs not tracked well
- Focus: Manufacturing expertise